

## THE DIAGNOSIS OF ABSCESS OF THE LIVER.

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ABSCESS of the liver occurs in a variable percentage of cases dying from amoebic dysentery, according to the statistics of different investigators. Woodward, for example, collated the autopsy records in 3680 dysenteric subjects, and found 21 per cent. having abscess of the liver. Boston, in a similar collation of 2430 dysenteric autopsies, found 20 per cent. with liver abscess. The annual report of the Sanitary Commissioner with the Government of India for 1894 shows that 35 per cent. of the European soldiers who died from dysentery in India had pus in the liver. These statistics, based upon autopsy findings, while interesting from the pathologist's stand-point, and instructive in emphasizing the importance of one constantly bearing in mind the possibility of liver-pus complication in dysenteric cases, do not however reveal the true relation between the disease dysentery and its most common complication or sequel, for they do not include the whole mass of dysentery cases treated during the time, and in the locality, in which the disease was rampant, and from which the autopsy records were made. The figures do not include the number of cases that recovered, with the number that succumbed to the primary disease or its complication, and therefore do not give the surgeon a correct idea as to the frequency with which he may expect a suppurating liver in his dysenteric patients. In order to ascertain this relative frequency of abscess formation, while in charge of the surgical work, I investigated the records of the First Reserve Hospital, Manila, P. I., in 1901, the data covering a period of over two years, and found that liver abscess occurred in slightly less than 5 per cent. of dysentery patients among the American soldiers in the Islands. A like computation was recently made by Dr. Craig, at the Army General Hospital, Presidio of San Fran-

cisco, the principal receiving hospital in the United States for patients from the various military hospitals in the Philippines, and he finds that the percentage of liver abscess complication of amoebic dysentery cases treated in this hospital during the past five years is approximately the same,—5 per cent. This number then (one abscess of the liver to every twenty cases of amoebic dysentery) may be accepted as the relative frequency with which we have to deal with liver-pus complication in patients who have contracted dysentery in the Philippines, and in view of the increasing traffic between our country and the Island ports, with large numbers of dysentery patients returning yearly to our shores, the subject will be of some interest to physicians under whose care these cases eventually come for treatment.

The estimate given has no reference to the type of dysentery indigenous to our own country, for it is a well-known fact that abscess of the liver is a rare concomitant of dysentery contracted within the limits of the United States. During my service as Assistant on the clinical staff of one of the largest hospitals in an Eastern city, covering a period of nearly five years, I recollect but one case of abscess of the liver, of unknown origin, treated in that institution. Neither has the estimate any reference to the disease contracted in any other tropical country than our Island possessions, for, as Manson has pointedly stated, drawing his conclusions from a large experience in the study of dysentery in warm climates: "Even in hot countries the dysentery of some places is more apt to be followed by liver abscess than is the dysentery of other places," and in Egypt and India, for example, where the disease is particularly common, it may be that hepatic abscess is a more frequent complication than our experiences have shown it to be in the Philippines. Those patients having dysentery contracted in the tropics and who come to us for treatment, will however be principally those returning from the Islands, and in 5 per cent. of these cases we can count on liver infection.

The ability to recognize this liver complication is of course of paramount importance to the surgeon who would deal suc-

cessfully with such cases. It is hardly a credit to us to read that, out of so many hundreds of dysenteric cases coming to autopsy, a large number are discovered by the pathologist as having liver abscess unrecognized on the sick-bed. Such findings will be less common as our knowledge of the disease increases, and the liver condition is diagnosed while it is still operable. That this is possible in every case has been proved by the experiences of the staff at the Army General Hospital in this city, where since the fall of 1902, to my personal knowledge, among seventy odd cases that have died from dysentery, but one case of liver abscess found its way to the post-mortem table undiagnosed; and this was a suspected case, but unwarranted dependence on the aspirating needle as a diagnostic means led to delay in decisive action until the patient succumbed to pleural rupture. During this period twenty-four cases of liver abscess were operated upon.

The diagnosis of liver abscess can best be set forth by describing a typical case, keeping in mind at the outset that we are dealing with a complication, or a sequel, of dysentery, and that the pus formation in the liver never antedates the pathological lesion in the bowel. In the majority of cases a history of a previous dysenteric attack can be elicited from the patient, but the absence of such history should not mislead us into a wrong conception of the relationship between the two diseases. Extensive dysenteric ulceration may exist in the bowel, and in some instances give rise to no active subjective symptoms whatever, so that the patient may be unaware of his intestinal condition; or slow forming minute intestinal ulceration, with slight change in the character of the stools, may pass unnoticed by the patient until he presents himself with hepatic discomfort. I have witnessed the post-mortem dissections of patients with multiple abscesses in the liver who denied ever having had any looseness of the bowels, or ever having seen any evidence of blood in the stools; yet the characteristic ulcers were prominent in various portions of the large bowel and ileum. These cases are the dysenteric analogues of "walking typhoid" patients fre-

quently met with, and in whom, notwithstanding the latency of symptoms, the intestinal lesions exist.

The failure of the surgeon to at once elicit the history of an antecedent dysentery may also be due to a faulty recollection or a misconception on the part of the patient which leads him to make erroneous statements that can be corrected by careful inquiry into past habits, a circumstance which was impressed upon me on several occasions, when patients presenting themselves with a suspicious liver condition denied ever having had a previous dysenteric attack, yet close questioning brought forth the information that a slight attack of "diarrhea," or a "looseness of the bowels," occurring in the tropics, dated back one, two, or four years, and was entirely forgotten. Again, the puzzling autopsy reports of cases of amœbic abscess of the liver occurring independent of, or in the absence of, any bowel lesion may find explanation in the probability that dysenteric ulcerations of a small and superficial character are often either not sought for or are overlooked during evisceration of the subject, or, that having gone on to resolution, the minute scars pass unnoticed by the pathologist as he flushes the gut under the water-tap searching for macroscopic lesions. So that in those cases of liver abscess where a history of, or evidence of, antecedent dysentery is not obtainable, it must not be inferred that the disease never existed. On the contrary, I am prone to believe that all cases of amœbic abscess have a causal factor in bowel ulceration.

The case with liver abscess belongs to one of two classes: he is either a patient returning from the tropics suffering with chronic dysentery, and in whom the intercurrent hepatic lesion is discovered during the routine examination on his arrival; or, having returned from the Orient in fairly good condition at some previous time, a month, a year, or several years it may be, he now seeks relief from a gradually increasing hepatic disturbance, with a history of dysentery that may or may not be forthcoming. The one who is still suffering from a chronic dysentery on admission presents the well-known clinical aspect of this disease, plus the symptoms dependent upon the liver

lesion, and is therefore in a more precarious state than the one who was cured of his dysentery and who has enjoyed a period of respite from invalidism, but who is now suffering from its perilous sequel. The case in whom the bowel condition is in abeyance will have more clearly defined symptoms and will be more readily recognized; and once the local condition in the hepatic region is thoroughly understood the symptoms and signs dependent thereon may easily be isolated in patients in whom the abscess is a concomitant affection.

In describing a typical abscess case I have to take exceptions to the clinical picture of this disease presented by the leading European authorities on tropical diseases and their American editors. The picture drawn by these authors is that of a patient in whom the pathological process in the liver is far advanced, with neighboring structures seriously involved, and the abscess on the verge of rupture. To advocate delay until the abscess had reached such proportions before a diagnosis is reached is dangerous teaching. One would not consider it permissible to withhold diagnosis in a chronic appendicitis case under treatment until the organ was about to rupture and empty its purulent contents into the peritoneal cavity, and there is no more reason why the existence of pus in the liver should not be determined before the disease has advanced far and reached dangerous limits. The clinical features of the abscess in its incipient stage are sufficiently prominent to make it possible to recognize the condition early, and the efforts of this paper are directed to this end.

One is impressed at the outset on examining the patient that he is quite ill. He looks emaciated, usually from ten to thirty pounds under weight; his features are drawn and set, giving him the haggard expression of one who has suffered continuously for some time. His complexion is the ashy-brown color common to the chronic dysenteries who have seen several years' service in the tropics. His eyes are lustreless, and he looks from one object to another slowly and in a disinterested manner. He walks erect, but lacks activity. On questioning him in reference to his illness, he will state that for some weeks

past he has had an unaccountable languor and depressed spirits; has lacked interest in his surroundings, and feels irritable under the stress of work. He complains of feeling feverish towards evening, and is inclined to remain near a stove most of the time, but denies having had chills. His breath is foul and he has a dull headache, not very severe, but constant in the temporal or frontal region. His principal complaint, however, is a sense of weight and dragging in the right hypochondrium. He will give a history of a dysenteric attack in the tropics some months or years back, and during his service beyond the seas he was a moderate user of alcohol of mixed variety, and not always careful in the selection of food. With this information he will be put to bed, a four-hour temperature is outlined, a liquid diet is prescribed, and a copious dose of Epsom salts (sixty grams) administered, even in the presence of dysentery, to deplete the abdominal viscera and thus facilitate examination on the following day. In the meantime a differential blood count will be made, the stool will be examined for amoeba and other parasites, his urine will be investigated, and if he has a cough with expectoration, his sputum will be examined microscopically. At the end of twenty-four hours a physical examination of the patient is made, the laboratory reports compared, and the following diagnostic points are searched for, set down in the order of merit:

1. Liver enlargement, with local tenderness and pain. The local liver condition, next to the dysenteric history, is naturally of first importance. With the patient in a prone position, lying on his back with his thighs flexed, the liver dulness is outlined by percussion.

In a case seen early in the course of the disease, or when the abscess is still small, the normal liver dulness may be increased but slightly,—a finger's-breadth on the upper or the lower border. In two cases on which I operated, having single abscesses the size of a hen's egg near the outer border of the right lobe, there was no apparent liver enlargement on percussion. In two other cases having abscesses of the same size,—one near the outer and posterior surface of the right lobe, the

other in the lobulus spigelii,—there was a slight enlargement, in the first case a finger's-breadth above the normal dome outline, in the second case below the costal margin on the right side towards the median line. In the majority of cases that appear for treatment, however, the increase in dulness is marked: from two to six centimetres, even in abscesses of comparatively small proportions and without adhesions. The increased percussion dulness will generally be outlined by an arching of the upper border, and will be most prominent between the right nipple line and the anterior axillary line. It frequently extends to the level of the sixth or fifth rib in this locality, and shades off in a downward direction posteriorly to the level of the eighth or ninth rib, near the spine. In one-third of cases dulness extends below the right costal border. In such cases the patient is told to take a deep breath and to exhale it rapidly with his abdominal wall relaxed, and the surgeon's fingers are pushed gently but firmly below the ribs on the under surface of the liver as far as possible, to see if any mass can be discovered that would change the normal flat contour of the inferior surface. In some cases this fact can be ascertained, and the amount of pain elicited, and the degree of wincing exhibited by the patient will also be of diagnostic value. At times, in the effort to carry out this procedure, the surgeon will encounter a marked rigidity of the right rectus muscle in the epigastric region; but this is generally a temporary spasm, and the muscle will relax after several efforts at posterior pressure, and the patient's confidence is gained. This temporary reflex spasm must not be confounded with a fixed rigidity,—a later sign of liver abscess on the under surface in this region, and which means that the abscess has reached the surface of the organ at some point in the neighborhood, and the peritoneal surface is involved in the inflammatory process.

Increase in dulness, then, either towards the nipple or below the right costal border, is the rule in these cases, and signifies (other signs being equal) a pus collection in the right lobe,—the most common site of abscess. Seventy-five per cent. of cases on whom I have operated have had abscesses in the right

lobe; Craig reports the same percentage of right lobe infection in post-mortem work during the past five years. Ronx gives the number 70.8 per cent. from a collective investigation at autopsy; so that the usual site of infection of those who die with the disease, and those who are operated upon and recover, is the same. The reason abscess of the liver occurs more frequently in the right lobe finds its explanation in the laws of normal physics. The amœbae and other bacteria pass through the ulcerated surface of the intestine into the mesenteric veins and enter the vena porta, which passes upward to the under surface of the right lobe of the liver, entering the organ through the transverse fissure, where it divides into the right and left branches, supplying the corresponding lobes. The right branch, from its direction, is really the continuation of the main trunk, and being the larger, shorter, and more direct route for the blood stream, the more voluminous and swifter current will carry a preponderance of the bacteria or emboli containing them into the capillaries of the right lobe. Single abscess of the left lobe is a comparatively rare occurrence, and increased percussion dulness limited to this lobe is accordingly an infrequent phenomenon. When the left lobe is enlarged, the dulness is increased downward in the epigastric region, to the left of the median line, and approaches the splenic area. When dulness over the left lobe is markedly increased, it is generally in association with an increase in dulness over the remainder of the organ, a sign linked with the condition of multiple abscesses throughout the gland.

Inquiry is made as to the presence of pain. In the majority of cases the patient will complain of considerable discomfort or a dragging sensation in the hepatic region, and when asked to locate it he will usually place the palmar surface of his entire hand over the area where this pain is located. Although not a specific indication, this gesture will give an idea as to the area of the liver probably involved. If he places his palm near the rib margin, it may be presumed that a lesion exists near the under surface of the right lobe; if he marks an area higher up on the chest wall, it implies that the trouble

exists towards the upper surface of this lobe. This discomfort is not always present, and may not be noticed by the patient while the body is at rest, but on walking or engaging in any exercise with jarring movements, the discomfort will assert itself in marked degree.

Sharp, stabbing pains will be complained of by some patients, especially on taking a deep inspiration. The site of this acute pain will be indicated at the point of the finger, and when the patient gives us this information we may know that we are dealing with a more or less advanced case; that the suppurative inflammation has reached the surface of the organ; that adhesions are forming or extending between the liver capsule and the peritoneum at this point. Occasionally these acute lancinating pains will be diffused over a wider area, and the patient will not be able to locate the point of greatest tenderness himself. Careful search by the surgeon with the point of his finger in an intercostal space, or deep down on the under surface of the liver, will discover it. This point is a valuable diagnostic sign.

2. Next in importance is the temperature. If the case be a pure amoebic infection, with the abscess limited to the parenchyma of the organ and is unaccompanied by adhesions, the evening temperature will average 100° F., the morning temperature dropping to a range between 98° and 99° F. Forty per cent. of cases appearing for treatment will have an evening temperature hovering around the 100° F. mark. This is true of large abscesses as well as small ones without mixed infection. If the temperature rises to 102° F., or above, in the evening, it means that we have, in addition to amoebic infection, a staphylococcus or a streptococcus or a bacillus coli invasion, the morning temperature in these cases being about the same as in a distinct amoebic infection. This clinical experience has been confirmed by examinations of the pus in the laboratory. In over half the number of cases operated upon, the examination showed a mixed staphylococcus and streptococcus infection in the pus scrapings from the abscess wall. In three cases the

bacillus coli was found, but it existed in conjunction with other bacteria. If the case be a pure amoebic infection primarily, but appears for treatment late in the course of the disease, the pus accumulations having reached the surface of the liver and invaded the neighboring structures, the temperature range will be similar to that found in a mixed infection, and is presumably due to the fact that the pus organisms have been carried to the part by the blood stream during the process of adhesion formation between the peritoneal surfaces.

3. Of equal weight is the pulse-rate. The average evening pulse-rate in a simple amoebic abscess case, independent of the size of the pus collection, ranges between 90 and 100, the morning pulse being normal. While in a mixed infection, either within the abscess or in a coecus invasion on the surface of the organ, the evening pulse is always above 100 beats, averaging 110, the morning pulse keeping in the neighborhood of eighty-five beats to the minute. So that we can very often judge by the chart record as to the presence or absence of a mixed infection prior to operation.

4. The blood count reveals an increase in leucocytes, principally the polymorphonuclear variety, and in my experience the number is far lower than that usually quoted by authors in writing of this affection. The number varies largely, and no set figures can be given as to certainty. I have operated on four cases in whom the average leucocytosis of each amounted to 11,000. On the other hand, two cases showed a leucocytosis of 44,000, and one of 67,000. These high numbers are rare, however, and the average leucocytosis may be stated as 12,500. This will be true particularly in those cases appearing early for treatment, and in pure amoebic infection. A leucocytosis of even 1000 less is of diagnostic value. The blood count should be made daily at a stated time, for comparison, until the diagnosis has been decided upon.

The presence or absence of malarial parasites in the blood will have no significance in liver abscess, as they are not a causal factor in suppurative disintegration of the organ, and

the hepatitis which they cause is merely of a plastic nature and never goes on to pus formation.

5. Distention of the vertical superficial, or subcutaneous veins over the hepatic and epigastric regions, is a sign noted in all cases, even in those in whom the pus collection is very limited. It signifies a process going on within the liver, presumably inflammatory, which interferes with portal circulation, and is marked in greater or lesser degree, according to the extent of liver engorgement. The dilatation of the veins is dependent upon the anastomosis between the portal system and the subcutaneous veins on the lower chest wall and epigastric region, through the veins in the suspensory ligament,—the accessory portal veins of Sappey,—and the veins dilated are the subcutaneous end branches of the superior epigastric and internal mammary. These veins do not become tortuous, but merely become more apparent beneath the skin layer in comparison with those upon the opposite side of the body, and their appearance will act as a guide in a general way to the location of an underlying suppurative zone. For example, prominent subcutaneous veins running upward on the lower chest wall in the anterior axillary or nipple line are associated with abscess in the right lobe near the upper and posterior surface.

6. Absence of jaundice will be taken into account, and in no case of liver abscess will jaundice be noted as a sign. A distinction must be made between the darkened sclera which is always present, and the bile-stained conjunctiva which never exists unless the abscess is complicated by an inflammation and obstruction of the larger bile ducts, as in certain forms of cholelithiasis. I have never seen the two conditions existing simultaneously in the same patient, and in those cases of amœbic abscess of the liver that have come under my observation jaundice was not present, even in a mild degree, in a single case.

7. The absence of splenic enlargement is likewise a noteworthy negative sign. It is a peculiar feature of this disease that, notwithstanding the enormous enlargement of the liver in those cases that come to us late in the course of treatment,

there is no enlargement of the spleen or tenderness over its area. This fact will aid in distinguishing between the disease under consideration and the various anaemiae and malaria.

8. Friction sounds over the hepatic area are heard in some cases, but they will be present only when the pus accumulation in the liver or its surrounding inflammatory zone has reached the surface of the organ and involved the peritoneal layer; or the process, having gone on to a later stage, and adhesions having formed between the liver and diaphragm, the pleura also becomes involved with a plastic exudate on its diaphragmatic surface. This sign will, of necessity, be present only in those cases well advanced on the course of the disease, or in such cases in which the abscess occurs primarily near the capsule. Friction sounds on the under surface of the liver cannot be detected.

9. Bulging of the right lower chest wall is not apparent in a recent case, or in an old case of medium-sized pus collection. It is noticed only in those cases in which the abscess has reached enormous proportions, and where portal circulation is correspondingly increased. In these advanced cases bulging is noticeable on inspection, and I have seen the circumference of the right lower chest wall increased eight centimetres.

10. Cough, dry in character, is an accompaniment of pleural irritation, and is therefore not complained of by patients in whom the abscess is limited to the parenchyma of the liver. When present, it means that the inflammation has extended through the diaphragm to the pleura at some point. It is therefore an associated symptom with an inflammation that has extended through the capsule. Should the cough be accompanied by a bloody and purulent expectoration, the sputum should be investigated most carefully, and the possibility of abscess rupture into the substance of the lung must be taken into consideration. I have seen three cases in whom the diagnosis was delayed until pulmonary rupture had taken place. In two of these cases the diagnosis of amœbic abscess of the liver was established by the pathologist during the routine

sputum examination on their admission to the hospital with suspected pulmonary tuberculosis.

11. Localized œdema of the chest wall, or in the subcutaneous tissues below the rib margin, is never present in recent cases or in large abscesses without adhesions. In cases of long standing, where adhesions have taken place between all the various structures from the liver to the cutaneous surface, œdema in an intercostal space or at a point in the infracostal region is occasionally noticed, and means that pus has invaded all the intervening structures, and is an evidence of delayed diagnosis.

12. Basic pneumonia in the right lower lobe is a late complication of hepatic abscess, and is therefore not a condition met with in abscess of recent occurrence or of small size. It is a later stage of the condition which has led up to diaphragmatic adhesions and pleurisy, and will not be found unless the suppurative process has involved all the structures from the liver to the visceral reflection of pleura. It is the result of inflammation extending by contiguity.

13. Shortness of breath is also a symptom of the disease far advanced, *i.e.*, it exists only when the liver is enormously enlarged, or in those cases where adhesions have formed between the liver and diaphragm, or where a visceral pleuritis exists, or where a pus accumulation in the left lobe is encroaching upon the pericardium. In the earlier stages of liver abscess, and in small accumulations in the interior of one of the lobes, normal respiration is not disturbed.

14. Pain in the right shoulder, radiating to the side of the neck, gnawing and aching in character, named as a symptom by many writers, is a rare occurrence. It is complained of only by those patients in whom the abscess is located in the neighborhood of the base of the gall-bladder, as in the lobulus spigelii, or in the posterior and inferior border of the right lobe near the transverse fissure. As abscess in this location is not as common as abscesses in other parts of the right lobe, the shoulder symptom will be present in but few cases.

15. The skin is moist over the entire body, but I have never seen profuse perspiration in these cases excepting those in whom the abscess had reached large proportions and was on the verge of rupture. Examination of pus from these cases revealed a preponderance of cocci. The skin of the hands is moist like that of the rest of the body, but is rarely cold and clammy.

16. Disturbances of the digestive organs are not severe. The tongue has a characteristic coating of a grayish fur at the base and middle, with clear edges and tip. It is never dry, brown furred, and cracked, as is the tongue of enteric fever. Neither is it thick and indented, as is the tongue of malaria. Very few patients have nausea or vomiting, but anorexia is common, and flatulence is to be expected. The digestive disturbances are limited principally to those conditions dependent upon a previous dysenteric attack, such as constipation and flatulence, or to a concurrent dysentery with repeated evacuations.

17. The urine presents several peculiar features, one of which is that even in small abscesses of the pure amebic type only, a slight trace of albumen is generally found. If, however, the abscess is a concurrent affection with dysentery, it is not unusual to find a limited number of hyaline and epithelial casts, together with a marked albumen deposit. I do not think, however, that their origin can be traceable to the condition of the liver, for albumen in small quantity, and casts in limited number, are found in nearly every case of dysentery returning from the Islands. The kidney condition more likely depends on the chronic intestinal ulceration, and not on the lesion in the liver.

18. Chills are a rare occurrence, and I have seen but two cases in whom rigors came on during the entire period of their invalidism with this affection. Both these cases had a fulminating streptococci infection, and were seen late in the course of the disease, the abscesses having ruptured into the pleural cavity. A sense of chilliness is, however, an accompanying symptom in every case.

19. An anaemia of 1,000,000 or 1,500,000 of red blood-corpuscles is the rule, with 60 to 80 per cent. of haemoglobin.

20. Pain or discomfort in swallowing is a symptom associated with pus collections in the left lobe,—a pressure symptom sometimes seen in multiple abscesses where the left lobe is greatly enlarged.

21. Stupor and delirium are absent except in fatal cases, as in the last stages of multiple abscesses.

Stool examination, positive for amoeba, is merely confirmatory. The absence of amoeba in the faeces has no significance.

I may state here that the X-rays are of no benefit as a diagnostic means in small abscess in the interior of the organ, as they are obstructed in almost equal measure by the density of the liver substance and the pus collection, and the difference in the shadows cast is indefinable. Where the abscess has reached large proportions or encroaches on the capsule, the change in surface contour can sometimes be outlined with the fluoroscope, and this evidence will supplement the information given by percussion.

To recapitulate the features which characterize a typical liver abscess case seen early in the course of the disease: He gives a history of dysentery contracted in the tropics, and has lost weight; his features are drawn; his complexion is ashy-brown; he suffers with languor, and complains of a dragging pain in his liver; his liver dulness is increased on percussion and has an area of tenderness; his temperature rises in the evening to  $100^{\circ}$  F. (pure amoebic type) or to  $102^{\circ}$  F. (mixed infection), the corresponding morning temperature being  $98^{\circ}$  F. and  $99^{\circ}$  F.; his evening pulse is 95 (pure amoebic type) or 110 (mixed infection), the corresponding morning beats numbering 72 and 85. He has a leucocytosis of 12,500, 70 per cent. haemoglobin, and 3,500,000 red blood cells by count; the subcutaneous veins over the hepatic area are dilated; he has no jaundice or splenic enlargement; there are no friction sounds over the hepatic area, nor is there bulging of the chest wall, or local oedema; cough is not a symptom; basic pneumonia is not present, and there is no dyspnoea; the skin is moist; the tongue is coated with a grayish film, and he is either constipated

(postdysenteric) or has an active chronic dysentery; his urine shows a trace of albumen, and at times casts; he feels chilly but has no rigors; his brain is clear but inactive; he is generally an ambulatory ease, but feels very much out of sorts, and is willing to resort to anything to be restored to health.